

## REMARKS

This Amendment is submitted in response to the Office Action dated September 21, 2010. Claims 11-12, 14-18 and 20-23 are pending in the present application. Claims 11-12, 14-18 and 20-23 are rejected in the present application, and Claim 20 is objected to. Claims 11, 18, 20 and 23 are amended herein. A Request for Continued Examination is submitted herewith. The Commissioner is hereby authorized to charge deposit account 02-1818 for the RCE fee and for any other fees which are due and owing. Applicants respectfully submit that the rejections are improper or have been overcome, as set forth in detail below.

The Office Action objected to Claim 20 regarding the term “hole transfer layer.” This term has been amended to recite “hole transport layer,” and Applicants respectfully submit that the objection to Claim 20 has been overcome.

The Office Action rejected Claims 11-12, 15, 17, and 22-23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2004/0032214 to Lee et al. (“Lee”), in view of U.S. Publication No. 2002/0113546 to Seo et al. (“Seo”). Of the rejected claims, Claims 11 and 23 are the sole independent claims. Claim 11 has been amended to recite, at least in part, an organic EL device comprising: a plurality of light emitting layers including a red light emitting layer, a green light emitting layer, and a blue light emitting layer laminated between an anode and a cathode; and an intermediate layer comprised of an organic material provided in at least one location between the light emitting layers, said intermediate layer having an electron blocking property and a hole transporting property, wherein the green light emitting layer comprises a hole transporting material and an electron transporting material, and wherein the red light emitting layer is formed in contact with a hole transporting layer that is formed on the anode. Claim 23 has been similarly amended to recite, at least in part, wherein the red light emitting layer is formed in contact with a hole transporting layer that is formed on the anode. Support for the amendments can be found, for example, on page 28 of the Specification.

Lee does not disclose or suggest wherein the red light emitting layer is formed in contact with a hole transporting layer that is formed on the anode. Rather, in each of the examples on Lee, the red light emitting layer 50 is disposed adjacent to the cathode 48. Thus, the presently claimed invention is structurally distinguishable from Lee. Moreover, Seo does not cure the deficiencies of Lee, where Seo is relied on merely for the disclosure of the green light emitting layer 507 including a hole transporting material and an electron transporting material.

Accordingly, Applicants respectfully request that the 35 U.S.C. §103(a) rejection of Claims 11-12, 15, 17, and 22-23 over Lee and Seo be withdrawn.

The Office Action rejected Claims 14, 16 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Lee and Seo, as applied to Claim 11, further in view of U.S. Publication No. 2004/0012331 to Yamazaki et al (“Yamazaki”). Claims 14 and 16 depend from Claim 11 discussed above. Moreover, independent Claim 18 has been amended in a similar manner to Claim 11 to recite, at least in part, wherein the red light emitting layer is formed in contact with a hole transporting layer that is formed on the anode. The additional Yamazaki reference is merely relied on for the alleged disclosure of an organic EL device having a plurality of light emitting layers 12a-c that may be doped with pigments to emit red, green, and blue light. However, Yamazaki does not disclose or suggest wherein the red light emitting layer is formed in contact with a hole transporting layer that is formed on the anode.

In the presently claimed invention, with the red light emitting layer 11 provided on the most anode 3 side, the red light emitting layer 11 can be formed by use of a hole transporting red light emitting material capable of doping therewith in a high concentration so that holes will be easily transferred into the green light emitting layer 12 and the blue light emitting layer 13 which are disposed on the cathode 5 side relative to the red light emitting layer 11. (See, Specification US 2006/0227079, paragraph [0069]). In such a condition, particularly since the intermediate layer “a” has both a hole transporting property and an electron blocking property, holes can be sufficiently transported into the blue light emitting layer 13 provided on the cathode 5 side relative to the intermediate layer a, and the injection of electrons into the green light emitting layer 12 can be restricted, so that the probability of re-coupling between electrons and holes in the blue light emitting layer 13 can be enhanced. (See, Specification US 2006/0227079, paragraph [0070]). This also contributes to enhancement of the intensity of blue light emission. (See, Specification US 2006/0227079, paragraph [0070]). Therefore, in the light emitting layers 11, 12 and 13, the rays in the respective colors can be taken out with good balance and at high efficiency, the balance between the luminous intensities for the respective colors is good, and white light emission with a good luminous efficacy can be obtained. (See, Specification US 2006/0227079, paragraph [0071]).

However, Lee, Seo and Yamazaki do not disclose or suggest the presently claimed feature of the red light emitting layer is formed in contact with a hole transporting layer that is

formed on the anode, even assuming that the references are properly combinable. Moreover, Yamazaki also discloses a diamond like carbon film 13a that is formed between the hole transport layer 11 (which is formed on the anode 10) and the light emitting layer 12a. (See, Yamazaki, [0049]). As such, even assuming arguendo that Yamazaki discloses that layer 12a could be a red light emitting layer, it is not in contact with the hole transport layer as presently claimed. Therefore, Lee, Seo and Yamazaki fail to render obvious the presently claimed invention.

Accordingly, Applicants respectfully request that the 35 U.S.C. §103(a) rejection of Claims 14, 16 and 18 over Lee, Seo and Yamazaki be withdrawn.

The Office Action rejected Claim 20 under 35 U.S.C. § 103(a) as being unpatentable over Japanese Application No. 2003-229265 to Murazaki et al. ("Murazaki"), in view of Lee, Seo and Yamazaki. Amended independent Claim 20 recites, at least in part, an organic EL device comprising: an anode; a hole transport layer formed on the anode; a plurality of light emitting layers including a red light emitting layer, a green light emitting layer, and a blue light emitting layer laminated on the hole transport layer such that the red light emitting layer is formed in contact with the hole transport layer that is formed on the anode; an electron transport layer formed on the blue light emitting layer; a cathode formed on the electron transport layer; and an intermediate layer comprised of an organic material provided between the blue light emitting layer and the green light emitting layer, said intermediate layer having an electron blocking property and a hole transporting property, thereby restricting the injection of electrons into the green light emitting layer and promoting the injection of holes into the blue light emitting layer, wherein the red light emitting layer is configured so that a portion of the holes injected through the hole transport layer are re-coupled in the red light emitting layer to give red light emission and a remainder of the holes are transported into the green light emitting layer, wherein the green light emitting layer comprises a hole transporting material and an electron transporting material, such that some of the holes transferred from the red light emitting layer are re-coupled in the green light emitting layer to give green light emission and the remainder of the holes are transported into the blue light emitting layer, and such that some of the electrons injected from the blue light emitting layer contribute to green light emission and the remainder of the electrons are transported to the red light emitting layer.

The Office Action admits that Murazaki does not disclose: (1) that the blue light emitting layer is on the cathode side of the green light emitting layer; (2) an intermediate layer; or (3) that the green light emission layer comprises a hole transporting material and an electron transporting material. (See, Office Action, pg. 10). Moreover Murazaki does not disclose red light emitting layer is formed in contact with the hole transport layer that is formed directly on the anode. In particular, hole pouring layer 16 is formed between the hole transport layer 17 and anode layer 15. As such the hole transport layer is not formed directly on the anode, as presently claimed. Lee, Seo and Yamazaki do not cure the deficiencies of Murazaki for at least the reasons discussed above, even assuming that the references are properly combinable.

Accordingly, Applicants respectfully request that the 35 U.S.C. §103(a) rejection of Claims 20 over Murazaki in view of Lee, Seo and Yamazaki be withdrawn.

The Office Action rejected Claim 21 under 35 U.S.C. § 103(a) as being unpatentable over Lee, Seo and Yamazaki, as applied to Claims 11 and 16 above, in further view of U.S. Publication No. 2002/0197511 to D'Andrade et al. ("D'Andrade"). Claim 21 depends from Claims 11 and 16 and is believed to be allowable for at least the reasons discusses above with regard to the Claim 11 rejection, and where D'Andrade is merely relied on for the disclosure of  $\alpha$ -NPD, TPD and CBP as materials having hole transport and electron blocking properties.


Accordingly, Applicants respectfully request that the 35 U.S.C. §103(a) rejection of Claim 21 over Lee, Seo, Yamazaki and D'Andrade be withdrawn.

For at least the reasons above, Applicants respectfully submit that the present application is in condition for allowance and earnestly solicit reconsideration of same.

Respectfully submitted,

K&L GATES LLP

BY

  
\_\_\_\_\_  
Thomas C. Basso  
Reg. No. 46,541  
Customer No. 29175

Date: December 21, 2010